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Report to the Chairman, Subcommittee  
on Military Research and Development  
Committee on National Security, House  
of Representatives

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June 1998

# DEFENSE ACQUISITION

## Decision Nears on Medium Extended Air Defense System



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National Security and  
International Affairs Division

B-278253

June 9, 1998

The Honorable Curt Weldon  
Chairman, Subcommittee on Military  
Research and Development  
Committee on National Security  
House of Representatives

Dear Mr. Chairman:

The Department of Defense (DOD) entered into an international agreement with Germany and Italy to acquire the Medium Extended Air Defense System (MEADS), a system that would defend maneuver force assets from theater ballistic and cruise missiles and various manned and unmanned aircraft. As you requested, we reviewed the MEADS program. Specifically, this report (1) discusses the unique capabilities that MEADS will add to U.S. air and missile defense, (2) evaluates the development cost of MEADS and its affordability within the expected ballistic missile defense budget, and (3) assesses the impact that international development will have on MEADS cost and capability.

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## Background

In 1989, the Army recognized that it needed to replace some of its aging air defense systems, including the Homing All-the-Way to Kill (HAWK) missile. The Army wanted the HAWK's replacement to be rapidly deployable, capable against weapons of mass destruction, and able to defeat a wide range of targets. The Under Secretary of Defense for Acquisition and Technology approved concept exploration for a new surface-to-air missile but stated that the Army needed a draft agreement for allied participation before system development would be approved.

The Army was successful in finding U.S. allies that were interested in jointly acquiring a new air and missile defense system. In February 1994, the United States officially invited Germany to participate in the system's development and production. Because of Germany's desire to make the program a U.S.-European cooperative initiative, the program was subsequently expanded to include France and then Italy. Representatives of the four countries signed a multilateral statement of intent in February 1995 to collaborate in the development of a system capable of meeting the requirements of all four countries. The effort became known as the MEADS program.

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Before DOD allows a military service to negotiate for the acquisition of a weapon system in cooperation with another country, DOD generally requires the program's sponsor to assess the likely impact of the proposed program by developing a summary statement of intent. The statement should include information on the benefits of an international program to the United States, potential industrial base impacts, funding availability and requirements, information security issues, and the technologies that will likely be involved in the program. Various officials within the Office of the Secretary of Defense are responsible for reviewing the statement of intent and recommending whether an international agreement should be negotiated.

Because of budget problems, France dropped out of the MEADS program before the memorandum of understanding was signed in May 1996. The other nations proceeded with the project definition and validation phase. The countries agreed that, during this phase, the U.S. cost share would be 60 percent; Germany, 25 percent; and Italy, 15 percent. According to the memorandum of understanding, new agreements would be negotiated before initiating other phases of the program, cost share percentages could change, and any of the countries could drop out of the program at the start of any new program phase.

MEADS, as envisioned by the Army, is part of the lower tier of a two-tier umbrella of air and missile defense. The Theater High Altitude Area Defense (THAAD) and Navy Theater Wide systems are upper tier systems that provide protection primarily against theater ballistic missiles. Existing and planned lower tier systems, such as the Patriot Advanced Capability 3 (PAC-3) and Navy Area systems, will engage shorter range theater ballistic missiles, fixed- and rotary wing aircraft, unmanned aerial vehicles, and cruise missiles. The Ballistic Missile Defense Organization (BMDO) has responsibility for the MEADS program.

DOD believes the MEADS program represents a new and innovative approach to the acquisition process. If the program is successful, DOD expects that MEADS will be a model for future collaborative efforts because it addresses problem areas associated with past transatlantic cooperative endeavors. The program reflects the mission needs of all countries, involves technologies from all participants, and requires competition between two transatlantic contractor teams.<sup>1</sup>

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<sup>1</sup>Two transatlantic contractor teams are competing during project definition and validation to develop a MEADS concept. In December 1998, DOD will choose one contractor's concept for design and development.

## Results in Brief

If the Army is successful in meeting established requirements, MEADS will have capabilities that no other planned theater missile defense system will possess. The system should defeat a wide range of threats arriving from any direction, be transportable within theater by small transport aircraft, be mobile enough to travel cross country or over unimproved roads with the maneuver force, and be sufficiently lethal to negate weapons of mass destruction.

Acquiring MEADS will affect higher priority missile programs or the infrastructure that supports those programs unless DOD increases BMDO's budget allocation. BMDO forecasted in March 1998 that it needed about \$1.8 billion for fiscal years 1999 through 2007 to pay its portion of MEADS' estimated \$3.6 billion design and development cost. In addition, BMDO will need another \$10.1 billion for fiscal years 2005 through 2016 to acquire eight battalions of equipment. The European partners are expected to contribute about one-half of the design and development funds. Thus, for fiscal years 2000 through 2005—the years for which BMDO is now budgeting—the U.S. cost could be reduced to about \$1.4 billion. BMDO has no funds budgeted for MEADS after fiscal year 1999 and has been reviewing various program options to find a less expensive acquisition strategy.

DOD officials believe that a joint cooperative effort with U.S. allies is the best means of acquiring MEADS because it reduces cost, improves political ties, and builds a more effective coalition force. However, DOD did not fully assess funding and technology transfer issues before initiating the international program and may not be able to achieve these benefits. U.S. and European program participants said that the United States may be viewed as an unreliable partner if it cannot fund its portion of the program, which could threaten the U.S.' ability to participate in future collaborative efforts. Even if the United States remains in the program, it may have difficulty developing a truly interoperable weapon without sharing valuable technology. The international structure may also prevent contractors from pursuing the most cost-effective system solution. Contractors are finding it difficult to use existing technology developed for other systems because the process for transferring U.S. information to foreign countries is slow and the United States is reluctant to transfer some critical technology. In addition, the execution of the MEADS program is more difficult because it does not have secure communication systems or program-specific security instructions. These difficulties might have been avoided if security experts had been included in negotiations of the international agreement.

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## MEADS Will Add Expanded Capabilities for Air and Missile Defenses

MEADS is being designed to add capabilities to the battlefield that currently fielded and planned air and missile defense systems do not provide. It will be more mobile than current systems, counter a wider range of targets, and intercept incoming missiles from any direction. Because of its unique capabilities, warfighting commands with theater ballistic missile defense missions support MEADS.

The Army plans to use MEADS to protect important access points on the battlefield, troop forward area assembly points, and maneuver force assets (such as refueling points and stores of ammunition) that must travel with troops as they move toward the enemy. To move with the maneuver force, MEADS must transition from defensive operations to a traveling configuration and return to defensive operations quickly. Similar to the maneuver force, MEADS must also be able to travel over unimproved roads and cross country. In addition, the Army wants to be able to move MEADS within theater aboard small transport aircraft, such as the C-130. Combatant commanders control the use of C-130s and can use them to move MEADS as necessary.

MEADS must be able to defend against a wide range of targets. It must counter short-range, high-velocity theater ballistic missiles carrying conventional explosives or weapons of mass destruction. The system is also required to detect and destroy low- and high-altitude cruise missiles launched from land, sea, or air platforms and carrying various types of offensive weapons. MEADS is required to counter remotely piloted vehicles and unmanned aerial vehicles carrying observation equipment or weapons and defend against slow, low-flying rotary wing aircraft and maneuvering fixed-wing aircraft employed in a variety of missions.

MEADS is expected to be the only land-based theater missile defense system designed to defend against targets approaching from any direction. The system will counter slow and low-flying cruise missiles that take advantage of terrain features to mask their approach and attack from virtually any direction.

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## Existing and Planned Systems Do Not Meet MEADS Requirements

No other existing or planned air and missile defense system meets all of the MEADS requirements. The Patriot system cannot keep pace with the maneuver force because it takes too long to assemble and disassemble for movement, and it cannot travel cross country. Also, Patriot was not designed to provide protection from all directions, and will require more aircraft to reach a theater of operation because of the system's size. Even

though the Army plans to use large transport aircraft, such as the C-141, C-17, or C-5, to transport both Patriot and MEADS to a conflict, MEADS requires fewer aircraft. For example, the Army will need 77 C-5 aircraft sorties to transport 1 Patriot battalion but only 36 sorties to transport 1 MEADS battalion. In addition, Patriot can only be transported within theaters of operation aboard the larger transport aircraft.

The ability of other systems to meet MEADS requirements is also limited. The Navy Area system may not be capable of protecting the maneuver force because its defended area will be limited by the distance from which it must stand off shore and the range of its interceptor. The THAAD and Navy Theater Wide systems are being designed to engage primarily medium-range ballistic missiles but cannot defend against theater ballistic missiles launched from very short ranges, aircraft, or low-altitude cruise missiles. Table 1 shows the capabilities of existing and planned air and missile defense systems in meeting MEADS requirements.

**Table 1: Capabilities of Other Air and Missile Defense Systems in Meeting MEADS Requirements**

	Transport into theater	C-130 transportable	Move with maneuver force	360-degree protection	Diverse target set
Patriot	Somewhat capable <sup>a</sup>	Not capable	Not capable	Not capable	Very capable
Navy area	Very capable	Not capable	Not capable	Very capable	Very capable
Navy theater	Very capable	Not capable	Not capable	Very capable	Not capable
THAAD	Somewhat capable <sup>a</sup>	Not capable	Not capable	Not capable	Not capable

<sup>a</sup>Both Patriot and THAAD require significantly more aircraft than MEADS for transport into a theater of operation.

Combatant commanders whose forces are most vulnerable to theater ballistic missile attacks identify MEADS as a priority system. Each year the Commander in Chief of each unified combatant command lists, in order of importance, key program shortfalls that adversely affect the capability of their forces to accomplish assigned duties. All commanders with a theater missile defense mission—the U.S. Central, European, and Pacific Command—believe that a shortfall exists in their ability to perform this mission. Each of these commanders either lists MEADS as a system needed

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to correct the shortfall or, according to command officials, considers MEADS a high priority.<sup>2</sup>

A U.S. Central Command official said that, although the Commander in Chief considers MEADS a high priority, he does not want to acquire that system at the expense of other theater missile systems. The official said that PAC-3, THAAD, and Navy Area systems are expected to be fielded sooner than MEADS and that the Commander does not want those systems delayed.

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## MEADS Presents Funding Dilemma

BMDO will be unable to acquire MEADS without impacting higher priority missile defense programs<sup>3</sup> unless DOD or the Army provide additional funds. BMDO's budget plan does not include funding for MEADS after fiscal year 1999 because the organization's budget is dedicated to missile systems that will be available sooner. Over the next 6 years, for which BMDO is currently budgeting, the organization needs \$1.4 billion to execute the planned MEADS program. Because it has had difficulty funding MEADS, BMDO is considering various program options to find a less costly acquisition program.

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### Estimate Forecasts \$3.6 Billion Design and Development Cost

In March 1998, BMDO developed, in cooperation with the Army, a cost estimate for a MEADS system that would meet Army requirements. According to this estimate, the United States expects MEADS total design and development cost to be about \$3.6 billion. The United States expects to pay about one-half of this amount, or \$1.8 billion. In addition, BMDO estimates that the United States needs approximately \$10.1 billion more to procure eight battalions of system hardware.

BMDO is interested in the MEADS' design and development cost because it is developing budget plans for the years when many related activities are scheduled. During design and development, engineers will work out the details of MEADS' design, perform engineering tasks that are necessary to ensure the producibility of the developmental system components, fabricate prototype equipment and software, and test and evaluate the

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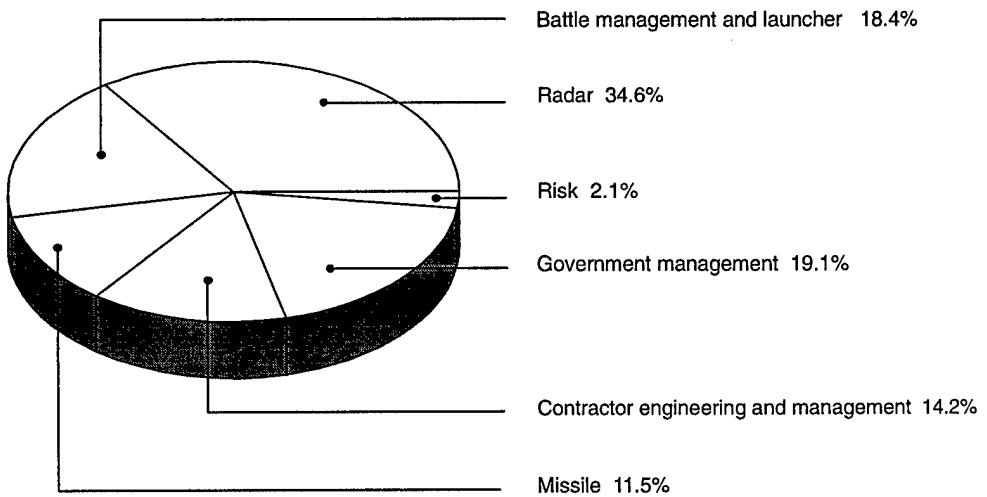
<sup>2</sup>U.S. Pacific Command did not list MEADS as a system needed to overcome the command's shortfall in theater missile defense. However, a command official said MEADS was absent from the list because the Pacific Command did not understand the importance of MEADS to U.S. Forces Korea, a subordinate command in the area most threatened by theater missiles. The official said that the Pacific Command's next shortfall list would indicate that the command attaches a high priority to MEADS acquisition.

<sup>3</sup>BMDO's funding strategy, as recommended by the Quadrennial Defense Review, places the highest priority on lower tier missile defense systems—Patriot PAC-3 and Navy Area—followed by upper tier systems—THAAD and Navy Theater Wide.

system and the principal items necessary for its support. In addition, the contractor will fabricate and install equipment needed to produce hardware prototypes and develop training services and equipment.

BMDO expects the system radars to be the most costly system components to design and develop. Army engineers said that they believe two separate radars—a surveillance and fire control radar—will be required and that three prototypes of each radar are needed for adequate test and evaluation. The fire control radar will be expensive because it contains thousands of transmit and receive modules that send and receive messages with the missile and simultaneously determine the target's location. Engineers believe the efficiency of existing transmit and receive modules must be improved to meet the MEADS hit-to-kill requirement. The surveillance radar is expensive because, to fulfil MEADS' mission requirements, it must accurately detect targets at long ranges. Figure 1 shows the percentage of design and development cost attributable to each of the system's components.

**Figure 1: Estimated Cost to Design and Develop System Components**



Source: Based on BMDO data.

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### Existing Technology Expected to Reduce MEADS Cost

A BMDO official said that the March 1998 cost estimate was reduced more than \$400 million<sup>4</sup> because Army engineers believed that MEADS could benefit from some technology developed and paid for by other missile programs. In a March 1997 cost estimate, BMDO recognized that existing technology could benefit MEADS and this reduced MEADS cost by about \$200 million. However, contractor personnel believe that actual program savings from technology leveraging could be more than \$400 million.

The MEADS program would realize the largest cost reductions if existing radars or missiles could meet MEADS requirements. The use of existing components would eliminate design, prototype manufacturing, and producibility engineering costs. Army engineers said that existing missiles, such as PAC-3, might be capable against the theater ballistic missile threat that MEADS is expected to counter. However, the Patriot Project Office has not simulated PAC-3's performance against MEADS entire ballistic missile threat and cannot do so without additional funds. In addition, the Army stated that PAC-3 may have limitations against the long-term cruise missile threat.

Current existing radars do not meet MEADS requirements. For example, Army engineers said that the THAAD system ground-based radar cannot provide protection from all directions and is much too large and heavy for a mobile system. The engineers also said that the Marine Corps TSP 59 radar, being used with the Marine Corps HAWK, takes too long to move and is much too heavy to be mobile.

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### Funding MEADS Will Affect Other Programs

BMDO's cost estimate shows that, to acquire and field MEADS as planned, it needs approximately \$11.9 billion over the next 18 years. The funds are expected to pay for the U.S. share of MEADS estimated research and development cost and the procurement of eight battalions of equipment. BMDO needs about \$1.4 billion between fiscal years 2000 and 2005 to develop a system that meets all of the Army's requirements.

BMDO has spent the last year reviewing program options that could reduce MEADS cost. However, as of April 1998, the agency had not changed its acquisition strategy. BMDO considered reducing MEADS requirements so that an existing missile could be used in the system. In addition, BMDO considered extending MEADS development schedule, delaying initial fielding of hardware, or relying on other radars to detect targets for MEADS.

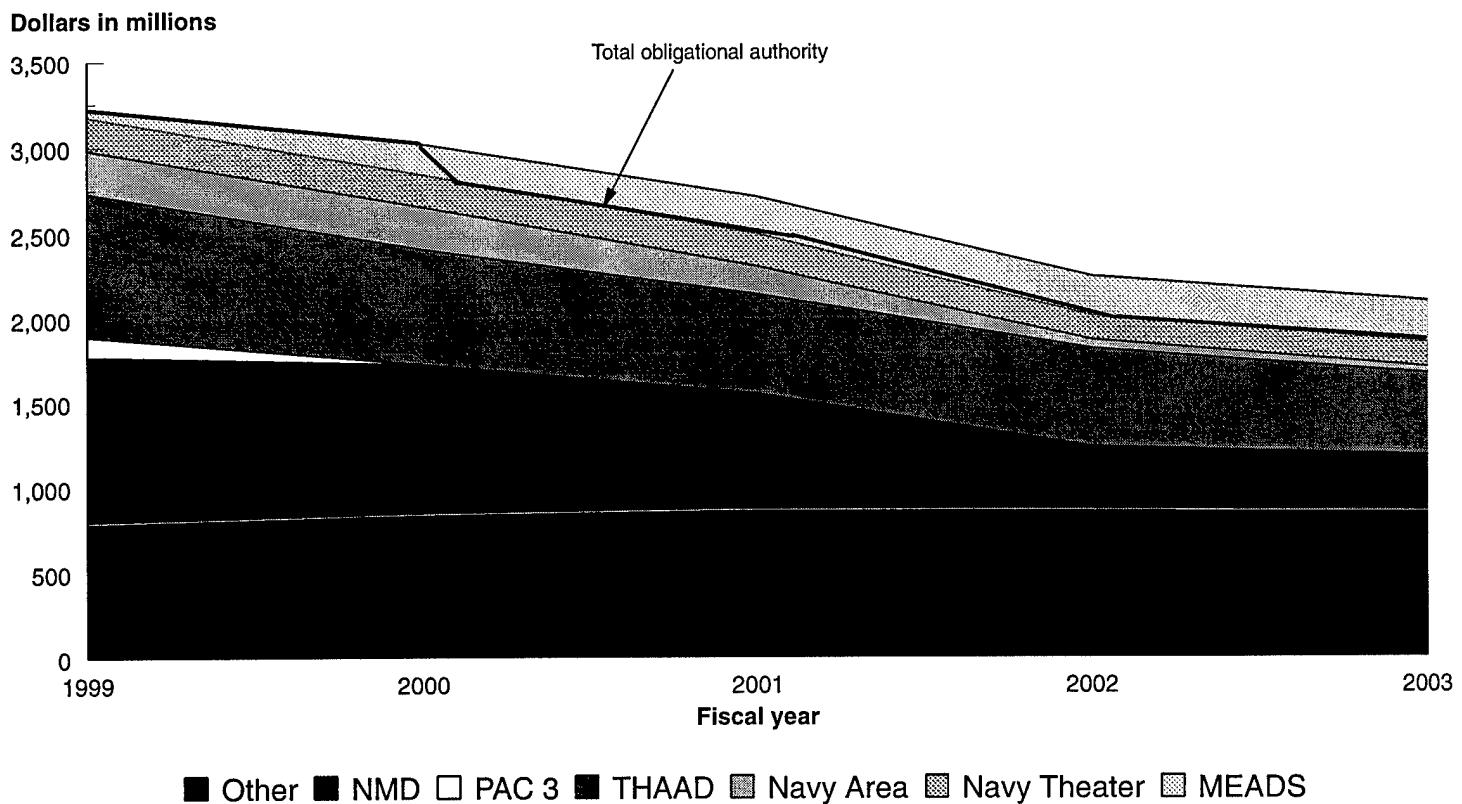
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<sup>4</sup>BMDO was unable to provide precise computations regarding the deduction. However, officials said they reduced MEADS design and development cost about 10 to 15 percent to arrive at their current estimated cost.

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The organization also considered developing and fielding the system in two stages or designing a system that relies on a currently undeveloped tracking network to detect and engage targets. Finally, BMDO considered tasking contractors to develop a system that meets critical requirements for a limited amount of funds. The Army's Deputy Program Executive Officer for Air and Missile Defense said that, if contractor funds are limited, some MEADS requirements might be eliminated to decrease the cost of the new system. However, the official did not know which requirements might be eligible for elimination. The official also said that, if BMDO cannot fund the program as it is currently planned, the Army favors either fielding MEADS in two stages or limiting development funds. MEADS partners are aware that the United States is considering other options. According to German and Italian government officials, they are willing to discuss program changes. However, until the Army and BMDO agree on a specific option, DOD cannot be sure its partners will find that option acceptable.

BMDO cannot provide the \$1.4 billion needed for fiscal years 2000 through 2005 unless DOD (1) increases BMDO's total obligational authority; (2) stretches out development and production of programs, such as PAC-3, THAAD, and Navy Area systems; or (3) drastically reduces BMDO funding earmarked for targets, systems integration and test, and management. BMDO's Deputy for Program Operations said that these program changes are undesirable because they increase program cost and delay fielding of important assets. Figure 2 shows that, if BMDO included MEADS research and development funding in its planned budget for fiscal years 1999 to 2003, the agency would exceed its budget authority.

**Figure 2: BMDO Fiscal Years 1999-2003 Research and Development Budget and Allocated Budget Authority**

Note: NMD is National Missile Defense. Other includes technology support, acquisition program reserve, joint tactical missile defense, family of systems, and small business innovative research.

Source: Our analysis of BMDO data.

## Joint Acquisition Presents Program Challenges

The United States, Germany, and Italy are collaborating in the development and production of MEADS because each needs an improved air and missile defense system but cannot afford to acquire a system by itself. DOD also believes that international cooperation in weapon systems acquisition can strengthen political ties, create a more effective coalition force, and increase the self-sufficiency of allied nations. However, BMDO did not fully address funding or technology transfer issues before initiating the international program and may not be able to achieve these benefits. In addition, security problems that might have been avoided if security

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specialists had been involved in negotiation of the international agreement continue to hinder the program's execution.

Officials in all three countries said that, given their current and expected defense budgets, MEADS is affordable only if it is acquired jointly. Total design and development and production cost reductions will depend on the acquisition strategy that BMDO and its partners choose. In addition to reducing the U.S.' cost to develop MEADS, combining the production quantities of the three countries will lower unit production costs and reduce the total U.S. cost, according to BMDO documents.

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**DOD Did Not Fully Assess All Funding Aspects of International Program**

DOD generally requires the approval of a summary statement of intent before the negotiations to acquire a weapon system in cooperation with another country. The DOD directive that established BMDO, however, gives the organization the authority to negotiate agreements with foreign governments and then obtain approval of those agreements. In implementing this authority, BMDO did not finalize its summary statement of intent until after negotiations to establish the international program had begun. In addition, the assessment was not sent to reviewers at the Office of the Secretary of Defense until all negotiations were complete and agreement had been reached on the \$108 million, 27-month project definition and validation phase of the MEADS program.

The summary statement of intent that BMDO eventually prepared did not fully address important issues that continue to plague the MEADS program. For example, although the multilateral statement of intent shows that the partners intended to develop and produce MEADS together, little attention was given to MEADS funding needs subsequent to project definition and design. The summary statement of intent did not address long-term funding needs by fiscal year, instead, it indicated that funding beyond fiscal year 1999 would be derived from funds budgeted to develop an advanced theater missile defense capability. However, in February 1996—about the same time that BMDO completed international agreement negotiations—a DOD review of BMDO's mission reduced the organization's budget and resulted in the deletion of advanced capability funds earmarked for MEADS.

Because BMDO did not fully assess the availability of funding for MEADS future program phases, the U.S. political ties with Germany and Italy could be affected. Some U.S. and European officials suggest that the United States may be viewed as an unreliable partner if it is unable to fund MEADS.

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The officials said that U.S. withdrawal from the development effort could affect its ability to participate in future international programs.

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### U.S. Technology Transfer Rules May Hamper Pursuit of Most Cost-Effective Solutions

BMDO's summary statement of intent did not address technology transfer issues that continue to trouble the MEADS program. Although the statement recognized that classified information developed for other missile programs would be transferred to the MEADS program, it did not address whether the programs that owned that information had concerns about its release. Also BMDO did not address the impact that a decision to withhold critical information could have on the execution of the program.

The United States has established procedures for releasing sensitive national security-related information to foreign governments and companies. These policies aim to preserve U.S. military technological advantages. Control policies limit the transfer of advanced design and manufacturing knowledge and information on system characteristics that could contribute to the development of countermeasures.

Technology release policies present special challenges for the MEADS program because it involves several sensitive technologies critical to preserving the U.S. military advantage. For example, MEADS could employ electronic counter countermeasures that offset jamming and intentional interference, signal processing techniques to enhance accuracy, and advanced surveillance techniques.

The United States has been reluctant to release information about these critical technologies into the program and slow in responding to many release requests. For example, release approvals have taken as long as 259 days. Some requests made at the start of the program are still awaiting a decision because program offices have been reluctant to release the information. This reluctance, as well as the approval time, reflect the rigorous release-consideration process. Program offices in each of the services that own particular technologies perform a page-by-page review of the requested data to identify releasable and nonreleasable data. In some cases, the program controlling the data will not directly benefit from its release and will risk giving up data that could expose system vulnerabilities.

These policies may limit the ability of contractors to leverage the use of existing missile system technology and pursue the cheapest technical solution. MEADS contractors said that, when data is not released on a timely

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basis, they are forced to explore alternative technical approaches or propose development of a component or subcomponent that may duplicate existing systems.

In some cases, the United States has approved release of technology into the program but restricted the information to U.S. access only. This restriction has undermined the functioning of integrated teams and efforts to strengthen ties among the participating countries. German and Italian defense officials and the European contractors involved in the MEADS program said that, unless they can assess the U.S. technology that U.S. contractors are using, they cannot be sure that the technology is the best or the cheapest available. The European contractors also said that, if this technology must be improved or adapted for MEADS use, they are asked to accept the U.S. estimate of the cost to perform these tasks.

The reluctance to share technology may also make it difficult to design and build a MEADS system that can exchange engagement data with other battlefield systems. For the international system to be truly interoperable, DOD may have to provide information that it has been reluctant to share.<sup>5</sup> If DOD officials decide that this information is too sensitive to share with MEADS partners, the United States may have to drop out of the program and develop MEADS alone or modify its capability.

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#### Other Security-Related Problems Hinder Program Implementation

The international MEADS program has been plagued by two issues that Army security officials believe could have been avoided if security specialists had been involved in negotiation of the international agreement. First, the program does not have a secure communications system. The absence of secure telephone and facsimile lines has hindered the program's execution. Army and contractor officials said that it takes up to 6 weeks to get classified information to MEADS contractors in Europe. Also, unsecured lines increase the possibility that unauthorized parties can access classified information.

Second, the failure of the participants to agree to MEADS-specific security instructions also increases the potential for unauthorized use of MEADS data. Pursuant to 22 U.S.C. 2753(a), no defense article or service may be sold or leased to another country unless the recipient agrees not to transfer title to, or possession of, the goods or services to a third party. However, Germany and the United States disagree on the definition of a third party. One of the German contractors participating in the MEADS

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<sup>5</sup>The details of this information are classified and therefore cannot be provided in this report.

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program employs a British citizen and Germany wishes to give access to MEADS classified data to this employee. DOD security officials told us that they do not believe that the German government could penalize the British employee if MEADS data was not safeguarded.

German and Italian contractor officials said that, with the formation of the European Union, European citizens cross country boundaries just as U.S. citizens cross state borders. The officials said that if a contractor's ability to hire personnel is limited by the U.S. interpretation of a third party, the MEADS program may lose valuable expertise.

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## Conclusions

If MEADS is designed to meet established requirements, it will give warfighters capabilities that are not present in any existing or planned air and missile defense systems. MEADS should be able to engage a wide range of targets, be easily transported by small transport aircraft, be capable of moving cross country and over unimproved roads, and be sufficiently lethal to destroy both conventional warheads and weapons of mass destruction. Because of these unique capabilities, war-fighting commands place a high priority on the acquisition of MEADS.

DOD believes that jointly developing and producing MEADS with U.S. allies will reduce the U.S. investment in the weapon system and strengthen political ties, creating a more effective coalition force and increasing the allies' ability to defend themselves. However, DOD does not know whether it is willing to share information to create a truly interoperable system, whether an international program can utilize existing U.S. missile system technology to its maximum advantage, how it will fund the U.S. share of the international program, or how it can alter the MEADS system or acquisition strategy to make the program affordable and acceptable to its partners. In addition, potential security risks exist because security specialists were not involved in negotiating the international agreement. An international program impacts the political ties between the United States and its allies, and its outcome impacts DOD's ability to negotiate future collaborative efforts.

Because DOD is considering other cooperative programs, the MEADS experience could provide valuable lessons. These lessons include careful consideration of all available program information before entering into an agreement to jointly develop a weapon system and assurance that funds will be available for program execution. In addition, areas that warrant attention include the (1) technology that is likely to be released into the

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program, (2) effect that the technology's release could have on U.S. national security, and (3) impact of a determination to withhold information on both the execution of the program and U.S. allies.

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## Recommendations

We recommend that the Secretary of Defense take steps to ensure that, for future international programs, the approval process includes careful consideration of the availability of long-term program funding and an in-depth assessment of technology transfer issues. In addition, we recommend that the Secretary of Defense include security experts in all phases of the negotiations of international programs.

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## Agency Comments and Our Evaluation

In commenting on a draft of this report, DOD generally concurred with our recommendations (see app I). DOD said that it would take steps to ensure that (1) the approval process for future international programs includes a careful assessment of long-term funding needs and technology transfer issues and that (2) security personnel are included in negotiations of international agreements.

Regarding the MEADS program, DOD stated that all parties to the memorandum of understanding understood that long-term funding would be subject to later determination and availability and that technology transfer issues were considered to the extent possible prior to entering into the agreement. In addition, DOD said that Army security personnel have been included in all MEADS negotiations.

We agree that the memorandum of understanding limits the U.S. commitment for the MEADS program to funding the project definition and validation phase of system development. However, the memorandum of intent signed by the three countries clearly stated that the United States, Germany, and Italy intended to continue the program through production. DOD regulation 5000.1, dated March 1996, states that, once a military component initiates an acquisition program, that component should make the program's stability a top priority. The regulation further states that to maximize stability, the component should develop realistic long-range investment plans and affordability assessments. However, DOD approved the MEADS program without a full assessment of BMDO's ability to fund the system's development beyond project definition and validation. With future funding in doubt, BMDO has spent the last year reviewing program options that could reduce MEADS cost and enhance the organization's ability to finance further development efforts. In a stable program, this

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time could have been used to further the program's primary mission of developing an effective weapon system.

DOD further commented that technology transfer issues could not be resolved because of the lack of detailed information on the transfers that would be requested. We believe a more detailed assessment, one that involved key program offices that would be asked to approve the release of information to the MEADS program, was feasible. In March 1995, the Army developed a strawman concept of MEADS' predecessor, the Corps Surface-to-Air Missile (SAM) system. On the basis of this concept, the Army said it could reduce Corps SAM's cost by utilizing technology from existing missile programs, such as PAC-3 and THAAD. The Army's belief that Corps SAM/MEADS would make extensive use of other systems' technology indicates that it could reasonably be expected to require information about those systems. At the very least, project offices that were expected to provide technology to the MEADS program should have been consulted to determine what type of information the offices would be willing to release to foreign governments. This knowledge would have allowed the United States, during negotiations with its potential partners, to communicate the type of information that could be transferred. On the basis of the memorandum of understanding, which states that successful cooperation depends on full and prompt exchange of information necessary for carrying out the project, European officials said that they believed the United States would freely share relevant technology.

DOD stated that security experts should support all phases of the negotiation process, although they may not be able to participate in the formal negotiations. In addition, DOD said that Army security personnel were involved in the creation of the MEADS delegation of disclosure letter and program security instruction. We agree that it may not be possible to include security personnel in the primary negotiations and recognize that the MEADS participants have established a tri-national security working group to address specific security issues. However, Army security personnel said the tri-national group's primary function, thus far, has been to resolve issues that prevent Germany from signing the MEADS program security instruction. Army, DOD, and BMDO security specialists said that, so far, they have not been asked to support the negotiations for the next phase of MEADS development. In addition, Army security personnel said that they were not involved in the creation of MEADS security documents, such as the program security instruction and the delegation of disclosure letter, until after the memorandum of agreement that initially established the MEADS program was signed.

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## Scope and Methodology

To assess MEADS contribution to the battlefield and warfighter support for the system, we compared MEADS requirements with those of other systems designed to counter theater ballistic and cruise missile threats. We also reviewed the integrated priorities lists of U.S. Central Command, MacDill Air Force Base, Florida; U.S. European Command, Stuttgart, Germany; and U.S. Forces Korea, Seoul, South Korea. When possible, we obtained the Commander in Chief's written position on theater missile defense in general and MEADS specifically. We discussed MEADS required capabilities with officials at the U.S. Army Air Defense Artillery School, Fort Bliss, Texas; Patriot Project Office, Huntsville, Alabama; and Program Executive Office for Air and Missile Defense, Huntsville, Alabama. In addition, we discussed warfighter support for the acquisition of MEADS with officials of the U.S. Central Command; U.S. European Command; U.S. Forces Korea; and U.S. Pacific Command, Camp H.M. Smith, Hawaii.

We reviewed BMDO's fiscal years 1999-2003 budget plan and other budget documents to determine if the organization had identified funding for MEADS. We also examined BMDO's acquisition cost estimate to determine the system's cost, the effect on cost of using existing technology, and the cost of design and development tasks. In addition, we discussed the budget estimate and BMDO's ability to fund another major acquisition program with officials in BMDO and the Office of the Under Secretary of Defense for Acquisition and Technology, Washington, D.C., and the U.S. MEADS National Product Office, Huntsville, Alabama.

To determine the impact of an international program on MEADS development, we examined work-sharing, cost-sharing, system requirements, and technology transfer documents and held discussions with Ministry of Defense officials in Rome, Italy, and Bonn, Germany; Army officials in the U.S. MEADS National Product Office; and officials in the State Department and various DOD offices, Washington, D.C. We also examined documents and met with contractor officials in Bedford, Massachusetts; Orlando, Florida; Rome; and Bonn. In addition, we examined security documents and held discussions with officials of the Office of the Under Secretary of Defense for Policy, Washington, D.C.; Intelligence Office of the Assistant Chief of Staff of the Army, Washington, D.C.; and the Army Aviation and Missile Command Intelligence and Security Directorate, Redstone Arsenal, Alabama.

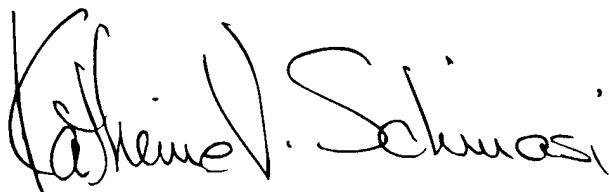
We performed our review between April 1997 and April 1998 in accordance with generally accepted government auditing standards.

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We are sending copies of this report to the Chairmen and Ranking Minority Members of the Senate Committee on Armed Services, the Senate Committee on Appropriations, Subcommittee on Defense, the House Committee on National Security, and the House Committee on Appropriations, Subcommittee on National Security; the Secretaries of Defense and the Army; and the Director of the Ballistic Missile Defense Organization. Copies will also be made available to others on request.

Please contact me at (202) 512-4841 if you or your staff have any questions concerning this report. Major contributors to this report are Karen Zuckerstein, Barbara Haynes, and Dayna Foster.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Katherine V. Schinasi".

Katherine V. Schinasi  
Associate Director, Defense  
Acquisitions Issues



# Comments From the Department of Defense



ACQUISITION AND  
TECHNOLOGY

## OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON  
WASHINGTON DC 20301-3000



18 MAY 1998

Ms. Katherine V. Schinasi  
Associate Director  
Defense Acquisition Issues  
National Security And International Affairs Division  
U.S. General Accounting Office  
Washington, DC 20548

Dear Ms. Schinasi:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "Defense Acquisition: Decision Nears on Medium Extended Air Defense System", dated April 16, 1998 (GAO Code 707241/OSD Case 1592). The Department concurs on both recommendations and has taken steps to implement the recommendations.

The DoD detailed comments in response to the recommendations are provided in the enclosure. The Department appreciates the opportunity to comment on the draft report.

Sincerely,

George R. Schneiter  
Director  
Strategic and Tactical Systems

Enclosure



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**Appendix I**  
**Comments From the Department of Defense**

GAO DRAFT REPORT DATED APRIL 16, 1998  
(GAO CODE 707241) OSD CASE 1592  
"DEFENSE ACQUISITION: DECISION NEARS ON MEDIUM EXTENDED AIR DEFENSE  
SYSTEM"

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RECOMMENDATIONS

**RECOMMENDATION 1:** The GAO recommended that the Secretary of Defense take steps to ensure that for future international programs, the approval process includes careful consideration of the availability of long-term program funding and an in-depth assessment of technology transfer issues. (p. 16/GAO Draft Report)

Now on p. 15.

**Response:** Concur. The Department of Defense (DOD) agrees that prior to entering into any international program, careful consideration of both short- and long-term funding should occur. In the case of MEADS, it was understood that short-term funding was available, and the Department properly conditioned the Memorandum of Understanding (MOU) with language which made the Department's follow-on participation subject to the availability of funds. All parties concerned understood that long-term funding was subject to later determination, review, and availability. All parties entered this agreement fully aware of the funding constraints.

Concerning technology transfer issues, the DOD considered such issues prior to entering into this agreement. Because of the competition that was to be ongoing during the Project Definition/Validation phase, and the lack or detailed information on the transfers that would be requested from the parties or their industries during the project, resolution of these issues was impossible prior to signing the MOU. Furthermore, Section X of the MOU (Disclosure and Use of Project Information) was consistent with Department policy on this issue. The MOU states that any release of information must be consistent with national disclosure policies and necessary to or useful in the project as determined solely by the Party owning the information. The determinations on such issues have been addressed subsequently during the project and are still being addressed to resolve outstanding issues.

**RECOMMENDATION 2:** The GAO also recommended that the Secretary of Defense include security experts in all phases of the negotiations of international programs. (p. 16/GAO Draft Report)

**DOD Response:** Partially Concur. The Department of Defense believes that security experts, as well as disclosure/technology transfer experts, should support all phases of the negotiations process, although this may not include participation in the formal negotiations themselves. Resolution of technology transfer and classified information disclosure issues, by their nature, are time-consuming, requiring extensive coordination and analysis by numerous affected offices within the DoD. If international programs are to be executed properly and in a timely manner, such issues must be addressed early in the process of formulating an international program and throughout the subsequent negotiations and program execution. While the physical involvement

Now on p. 15.

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**Appendix I**  
**Comments From the Department of Defense**

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throughout the subsequent negotiations and program execution. While the physical involvement of security personnel in the actual negotiations of an MOU may not be necessary, DoD concurs that security issues must be identified and properly considered in preparing for the negotiation of an international program agreement as part of a comprehensive DoD staffing process.

In this instance the Army's Deputy Program Executive Officer for Air and Missile Defense was the lead negotiator for BMDO, and Army security personnel were involved in creation and approval of both the Delegation of Disclosure Authority Letter and the Program Security Instruction (PSI). Security experts are included in the tri-national security working group which was established to address security issues with their material counterparts and to recommend security procedures and controls in accordance with national security policies. This is subsequently captured in the PSI, which is approved by the Director, International Security Programs, Office of the Deputy to the Under Secretary of Defense (Policy) for Policy Support.